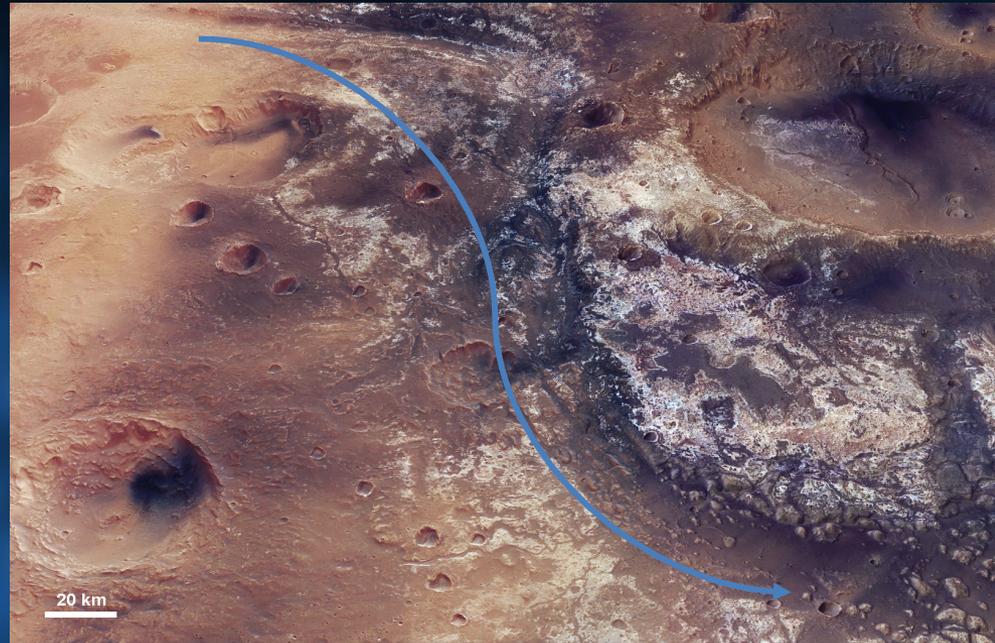


# Mars: How Warm For How Long?

**A new climate model developed for Mars may better explain how surface clays formed during sporadic episodes of warm and wet environments, during an otherwise colder early Martian climate.**

- Although modern Mars's average surface temperature is below freezing and with a very thin atmosphere, it must have once been warm enough for liquid water to carve out major surface features, such as Mawrth Vallis, and for clay minerals to have been formed at the surface, where they can be seen in thick layered outcrops. However, previous climate models could not account for these features.
- A new geochemical model proposes that short-term bursts of warmer environments during otherwise colder early Martian climate explains the development of water-altered mineralogy (e.g. clays) and illuminate early potential habitability.
- Better climate models of early Mars can better predict when liquid water may have been present on the surface, which is essential for determining what environments should be targeted to search for evidence of past life. Clays are the most abundant mineral on Mars that contain water; thus, understanding their formation conditions will help define the geochemical environment on Mars.



A view of light-toned surface clays at Mawrth Vallis, Mars. This High Resolution Stereo Camera (Mars Express) image illustrates water features along this large valley (blue arrow shows flow direction) cutting through the thick clay deposits (white colored material).